

Attachment G – Requirements Matrix

Category/ Ref#	Capability/Requirement	Release 1.0 implementation	Comments
<u>Remote Access</u>	<i>General requirements and guidelines.</i>		
RA1:	Client/Server Architecture (Single C-S)	Full	
RA2:	Use multiple clients/servers		
RA3:	Security		
RA4:	Run Client and Server on same or separate hosts	Full	Requires editing of “servers.txt” properties file to define additional servers
RA5:	Cross-platform connectivity		
RA6:	Telnet to Client/Server for remote ops		
<u>User Interface</u>	<i>General requirements and guidelines.</i>		
UI1:	User-friendly/Visual/Graphical	Full	
UI2:	Basic Control Functions (On/Off, File Management, I/O routing)	Full	Full for current capabilities
UI3:	Display program configuration status (connections, mode, etc.)	Full	Full for current capabilities
UI4:	Set/display S/C and GMT times		
UI5:	Pause/Resume Operations	Full	
UI6:	Log all system messages to event log	Full	
UI7:	Print Displays		
UI8:	Save/Restore Configuration	Partial	Not all modules save configuration
<u>Data Transport</u>	<i>General requirements regarding the sending/receiving/re-formatting of input and output data.</i>		
DT1:	Send/Receive data TCP/IP and UDP/IP	Full	
DT2:	Use Multiple IP cards simultaneously		
DT3:	Send/Receive Serial clock and data (Win NT, ISA based Avtec At-HSIO2 only)		
DT4:	Send/Receive Serial clock and data (Win NT, PCI based serial cards)	Partial	Only one serial card model currently supported
DT5:	Develop comparable Linux serial I/O drivers		
DT6:	Develop generic data-driven wrapper/unwrapper classes to build/verify message headers (Nascom, EDOS, RTP, etc)		
DT7:	Serial Data Encode/Decode via S/W (CR, R-S, Pseudo-R, Viterbi, Convolutional)		
DT8:	Operate in IP and Serial Modes Simultaneously	Full	
DT9:	Support Multicasting	Full	
DT10:	Continuous, intermittent, discreet transmission modes		

Attachment G – Requirements Matrix

new	IP/Serial conversion module		
<u>Telemetry Generation</u>	<i>High-level requirements regarding telemetry generation, transmission, and display</i>		
TG1:	Generic CCSDS Packet Formatter	Partial	CCSDS AOS only, no secondary headers
TG2:	PDB-driven CCSDS Packet Formatter	Partial	Formatter driven by text flat file
TG3:	Generic CCSDS Frame/CADU/VCDU Formatter	Partial	AOS only, no options on VCDU filling, physical channel mapping
TG4:	PDB-driven CCSDS Frame/CADU/VCDU Formatter		
TG5:	Generic TDM Formatter		
TG6:	PDB-driven TDM Formatter		
TG7:	Generate multiple data streams simultaneously	Full	Up to three channels
TG8:	Simulate S/C specific SSR data storage		
TG9:	Generate pattern-selectable data packets (e.g., ramping, octet sequence, random)		
TG10:	Insert CLCW in downlink		
TG11:	Playback pre-recorded files, data (SSR)	Partial	Implemented as separate module (TxFile), not part of telemetry
TG12:	Provide limited error injection (e.g., dropouts, sync errors, operator selectable data fields)	Partial	Packet headers editable
TG13:	CCSDS Packet based displays	Full	
TG14:	Update S/C time		
TG15:	TDM based displays		
<u>Command Ingest</u>	<i>High-level requirements regarding command ingest, response, and display</i>		
CI1:	Ingest serial commands		
CI2:	Ingest IP commands		
CI3:	Generic CCSDS validation checks (format, structure, COP-1, etc)		
CI4:	PDB-driven CCSDS validation checks		
CI5:	PDB-driven TDM validation checks		
CI6:	Increment command counter(s)		
CI7:	Log commands		
CI8:	Display commands, counts, etc.		
CI9:	Generate event messages		
CI10:	Other TBD responses (e.g., turn tlm on/off, change rates/formats, etc.)		
<u>Command Generation</u>	<i>High-level requirements regarding command generation, transmission, and display</i>		
CG1:	Generate PDB-driven CCSDS commands		
CG2:	Generate PDB-driven non-CCSDS commands		
CG3:	Transmit IP commands		
CG4:	Transmit serial commands		
CG5:	Edit/Save command files		

Attachment G – Requirements Matrix

new	Overwrite command counter(s) in RT pre-recorded data with SIMSS command counter value(s)		
<u>Data Analysis</u>	<i>High-level requirements regarding the analysis and display of “generic” input data</i>		
DA1:	PDB-driven telemetry quality monitor, decommutator		
DA2:	Operator selectable format displays (hex, oct, 8-bit, 16-bit, data shift, data inversion, etc)	Partial	Data dump displays have choice of hexadecimal or octal
<u>Timing</u>	<i>High-level requirements regarding time code(s) and interrupt generation</i>		
TM1:	Develop H/W timing/interrupt generation (vs. system S/W)		
TM2:	Generate GMT		
TM3:	Generate S/C time		
TM4:	Generate TBD time code formats		
TM5:	Control timed activities in a simulated accelerated mode		
<u>Data Archiving</u>	<i>High-level requirements regarding storage and retrieval of input/output data</i>		
DR1:	Store/Retrieve data to/from disk files	Full	
DR2:	Store/Retrieve data to/from CDs	Full	
DR3:	Store/Retrieve data to/from 4mm tape		
DR4:	Store/Retrieve data to/from 8mm tape		
DR5:	Store/Retrieve data to/from Zip drives	Full	
DR6:	Store/Retrieve data to/from TBD devices	Partial	Can store or retrieve to/from any device recognized in directory structure
DR7:	In-line FTP		
DR8:	TBD Distributed Active Archive Center (DAAC) Products		
<u>Project Database</u>	<i>High level requirement regarding the integration of PDB-derived products</i>		
PD1:	Develop a standard Operation Database (ODB) format for all PDB derived data		
<u>Modeling</u>			
MD1:	Daemon to allow remote manipulation of internal data points		
MD2:	Develop generic orbit-based modeling		
MD3:	Develop generic event-based modeling		
MD4:	Scripts		
MD5:	Generate science instrument data		
<u>IMOC support</u>	<i>IMOC-specific capabilities</i>		
IM1:	Interface with IMOC using CORBA		
IM2:	Remote control from IMOC		

Attachment G – Requirements Matrix

IM3:	Generate IMOC simulator event messages		
IM4:	Generate simulated IMOC event messages		
IM5:	Generate reports on telemetry value history		
R & D			
RD1:	Finite State Modeling Concepts		
RD2:	HLA		
RD3:	Flight Dynamics tool integration		
RD4:	CORBA/DCOM/Enterprise Java Beans/NDDS		
RD5:	Evaluate Linux Portability		
RD5:	Initial Linux version		
RD6:	Instrument/Science Data Simulation		
RD7:	Formation Flying		
RD8:	Automated Model Generation		
RD9:	Integrate JSWITCH		